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PHILIP P. CALVERT, EDITOR EMERITUS

EDITORIAL STAFF

E. T. CRESSON, JR. E. F. J. MARX

J. A. G. REHN A. G. RICHARDS, JR.

R. G. SCHMIEDER

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ENTOMOLOGICAL NEWS

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Dragonflies (Odonata) Collected in Pennsylvania and New Jersey in 1945

By GEORGE H. BEATTY, III, Merion, Pennsylvania

From 6 April to 8 October, 1945, the writer collected dragonflies in central and southeastern Pennsylvania and in the southern half of New Jersey. 2251 specimens representing 93 species were obtained. Four other species [1] were positively identified in the field but were not captured, and three species,[2] including one of these four, were collected by a companion but not by the writer. Four other species,[3] not collected by the writer, were secured in the territory covered by this paper, in 1945, by another collector.

Date and locality records are occasionally augmented by those of another odonatist, Mr. John Gillespie, when they provide an extension of seasonal or geographic range or are otherwise significant.

The writer is responsible for all specific determinations, though in some cases confirmation was made by Dr. Philip P. Calvert. With the exception of specimens deposited in the Academy of Natural Sciences, Philadelphia, and a few presented to other dragonfly students, this collection has been retained intact, each specimen being carefully preserved with complete data. It is available to students who wish to examine it.

[1] *Epiaeschna heros, Epicordulia princeps, Dorocordulia lepida,* and *Libellula julia.*

[2] *Dorocordulia lepida, Argia bipunctulata,* and *Enallagma recurvatum,* all collected on 24 June by John Gillespie.

[3] *Cordulegaster obliquus, Epicordulia princeps, Libellula vibrans,* and *Enallagma carunculatum.*

The following list of collecting stations includes only those which were visited by the author himself. Except for those in Centre County, Pennsylvania, and Cape May, New Jersey, all of the localities are well within a fifty-mile radius of Philadelphia.[4] A number of species are recorded from this Philadelphia region for the first time in this paper and others are the first from their respective states. A few dragonflies are being recorded for the first time for the faunal zone in which they were collected this year. In the annotated list which follows, many of these extensions of geographic range are noted and seasonal extensions are likewise pointed out.

1945 COLLECTING STATIONS

ALBERTSON BROOK, Hammonton Twp., Atlantic Cy., N. J. 5 Sept.

This typical small cedar stream, about three miles south of Atsion, was inspected only near the highway. *Agrion apicale, Hetaerina americana, Argia violacea, Enallagma weewa,* and *Ischnura posita* were the dragonflies collected here.

ATSION LAKE, Shamong Twp., Burlington Cy., N. J. 5 Sept.

Only *Libellula pulchella, Sympetrum vicinum* and *Argia violacea* were found at this large artificial pond. In a small cranberry bog in the woods nearby, *Anomalagrion hastatum* occurred in swarms.

BATSTO POND, Washington Twp., Burlington Cy., N. J. 5, 7 Sept.

A large artificial pond, formed by damming the Batsto River on the site of a former cedar swamp. The pond has narrow sandy beaches beyond which there is a shallow zone with a

[4] A list of dragonflies known to occur within fifty miles of Philadelphia is being prepared. Dr. Calvert, in his Catalog of the Odonata of the vicinity of Philadelphia [Trans. Amer. Ent. Soc., XX: 152a–272, 1893], established a twenty-mile radius for the "Philadelphia Odonate Fauna." However, so many dragonfly habitats near the city have ceased to exist or have been ruined by pollution since the collecting days of Calvert, Laurent, Daecke, and Aaron, that today's collector must go farther afield to find the same species which were formerly abundant in and near Philadelphia.

dense growth of rushes. Among the rushes, *Perithemis domita, Celithemis eponina* and *monomelaena, Libellula incesta, Sympetrum ambiguum, rubicundulum,* and *vicinum, Pachydiplax longipennis, Lestes vigilax,* and *Enallagma geminatum* were collected.

At a small mill-pond near the outlet of Batsto Pond, the following were noted: *Anax junius, Celithemis martha, Sympetrum rubicundulum* and *vicinum, Lestes vigilax, Argia violacea, Enallagma geminatum, E. aspersum,* and *Ischnura posita.*

Bear Meadows, Harris Twp., Centre Cy., Penna. 16 June.

This locality consists of a large sphagnum bog at an elevation of 1824 feet, surrounded by higher mountains. The bog is covered with a dense growth of Kalmia, Rhododendron, Vaccinium, and Gaylussacia, and through its center flows a deep slow stream about ten feet wide. Along the stream and elsewhere in the bog twenty-two species of dragonflies were found, including *Gomphaeschna furcillata, Basiaeschna janata, Cordulegaster diastatops, Cordulia shurtleffi, Libellula julia, L. quadrimaculata, Leucorrhinia intacta, L. hudsonica, Amphiagrion saucium, Nehalennia irene, N. gracilis, Chromagrion conditum,* and *Enallagma hageni.*

Branch of Friendship Creek, Southampton Twp., Burlington Cy., N. J. 31 Aug., 4, 7 Sept.

A small cedar-stained stream flowing slowly over a sandy bottom. It was examined only where it is crossed by the highway about one mile west of Fisher's Dam, where it is dammed to form a small pond. *Libellula incesta, Lestes vigilax,* and *Ischnura verticalis* occurred at the pond, while *Argia violacea, Enallagma weewa,* and *Ischnura posita* were found along the stream.

Broomall, Marple Twp., Delaware Cy., Penna. 6, 9 Apr., 17, 22, 25, 29 May, 6 June, 16, 20, 23; 26 July, 1, 2, 3, 4, 5, 7, 8, 10, 11, 16, 27, 29, 30 Aug.

The chief collecting ground consisted of several acres of waste fields, overgrown with small sassafras, dogwood, and tulip trees, which lie at the edge of a woodland area of about

ten acres containing many tall tulip trees and various smaller trees. This woodland forms a screen across the head of the narrow valley of Langford Run, a small, clear stream which flows into the larger and polluted Darby Creek about three quarters of a mile below. The screen of trees apparently stops the progress of most of the dragonflies which come up the valley and causes them to settle down in the bordering fields.

Gomphus lividus, Dromogomphus spinosus, Boyeria vinosa, Aeschna umbrosa, Macromia illinoiensis, Somatochlora tenebrosa and *filosa, Perithemis domita,* and *Sympetrum semicinctum* are among the nineteen species found at this unusual and interesting locality.

CAPE MAY CITY, Lower Twp., Cape May Cy., N. J. 22 Sept.

Many dragonflies, apparently part of the autumnal migration, were seen flying about a weedy plot of about ½ acre near the beach. These included *Anax junius, Epiaeschna heros, Sympetrum rubicundulum, Pachydiplax longipennis, Pantala flavescens, Tramea carolina,* and *Enallagma civile.* Dragonflies were evident in lesser numbers throughout the town.

CAPE MAY POINT, Lower Twp., Cape May Cy., N. J. 22 Sept.

Migrating dragonflies were collected among the wooded sand-dunes near the beach.

CECIL, Gloucester Cy., N. J. 5 Sept.

At a small, shallow, artificial lake near N. J. Highway No. 42, many dragonflies were collected. These were found among the emergent vegetation which extended for ten to fifty feet from the shore and included *Nannothemis bella, Celithemis martha, Sympetrum vicinum, Hetaerina americana, Lestes vigilax, Enallagma signatum, vesperum,* and *pictum, Ischnura ramburi,* and *Anomalagrion hastatum.*

CENTRAL SQUARE, Newtown Twp., Delaware Cy., Penna. 22, 25, 29 May, 6 June, 8, 10 Aug.

At a small artificial pond of about 1 acre, containing practically no vegetation, but many fish, twenty-one species were found but none was of particular interest.

CLARK'S BROOK, Hammonton Twp., Atlantic Cy., N. J. 7 Sept.

About one mile north of Albertson Brook, this small cedar stream proved to be unusually well populated by dragonflies. *Boyeria vinosa, Agrion apicale, Argia tibialis, A. violacea,* and *Enallagma weewa* were collected.

At Sleeper Brook, about 100 yards north of Clark's Brook, *Argia violacea, Enallagma weewa,* and *Ischnura posita* were found.

"CRUM CREEK FARM," Newtown Twp., Delaware Cy., Penna. 8 Aug.

The artificial pond of about one acre lies about two miles west of Newtown Square and about fifty yards east of Crum Creek. It is used for swimming and boating but nevertheless supports an interesting dragonfly fauna. Thirteen species were found at the pond, but *Agrion maculatum* was the only dragonfly seen along Crum Creek nearby.

DARBY CREEK, Radnor Twp., Delaware Cy., Penna. 27, 29 Aug.

This rather large, polluted stream has not proved to be a good collecting ground for dragonflies. Most of the collecting was done at a point about two miles northeast of Newtown Square. *Boyeria vinosa, Sympetrum rubicundulum, Agrion maculatum, Hetaerina americana,* and *Argia violacea* were the only species occurring here.

DAVIS LAKE, Cape May Point, N. J. 22 Sept.

At this artificial sand-pit pond, few dragonflies were seen except *Enallagma civile* and *Ischnura ramburi.*

"ECHO VALLEY FARM," Newtown Twp., Delaware Cy., Penna. 8 Aug.

About 1½ miles west of Newtown Square, a few dragonflies were collected at a tiny pond formed by damming a small stream. The pond was choked with emergent vegetation and surrounded by alders. Only common species such as *Sympetrum rubicundulum, Erythemis simplicicollis, Agrion maculatum, Lestes rectangularis,* and *Ischnura verticalis* were taken.

ERMA, Lower Twp., Cape May Cy., N. J. 22 Sept.

A few dragonflies, including *Sympetrum ambiguum* and *S. obtrusum,* were collected at a small sphagnum bog which was nearly dried up at the time of the writer's visit.

FISHER'S DAM, Southampton Twp., Burlington Cy., N. J. 21, 28, 31 Aug., 4, 7 Sept.

A chain of small lakes was formed when dams were erected to flood a cut-over cedar swamp. The lakes are now almost completely dried up, but the odonate fauna is extremely rich and varied. Among the twenty-three species taken at various points about the lakes, canals, bogs, and streams are *Hagenius brevistylus, Boyeria vinosa, Somatochlora tenebrosa, Celithemis eponina* and *martha, Libellula incesta, Agrion apicale, Argia tibialis, Enallagma geminatum, E. pictum, E. weewa,* and *Anomalagrion hastatum.*

FOLSOM, Atlantic Cy., N. J. 5 Sept.

Dragonflies were collected in a swampy field about one mile southwest of Folsom.

FRIENDSHIP CREEK, about 300 feet west of "Branch of Friendship Creek," described above. 4, 7 Sept.

At this large cedar stream, *Enallagma weewa* was abundant. *Agrion apicale, Argia violacea,* and *Boyeria vinosa* also occurred here. This is the same stream which flows out of the lower lake at Fisher's Dam. Its banks are densely overgrown, so it was examined only near the highway. At that point the stream is about twenty feet wide and at least four feet in depth. Most of the bottom was covered with Vallisneria, on the floating leaves of which *E. weewa* often came to rest.

HOLMES, Ridley Twp., Delaware Cy., Penna. 13, 21 Sept., 5 Oct.

The collecting locality here consists of two shallow pools on the site of a former brickyard with a combined area of less than an acre. They contain an abundance of sedges, cattails, and many other aquatic plants and are depressed below the level of the surrounding land, providing a very sheltered habitat for dragonflies. Only a fraction of the total yearly population is

represented by the following September and October captures: *Anax junius, Aeschna umbrosa, A tuberculifera, A. verticalis, Sympetrum obtrusum, S. vicinum, S. rubicundulum, Tramea carolina, Lestes forcipatus, L. rectangularis, L. unguiculatus, Enallagma civile, E. aspersum, Ischnura posita, I. verticalis,* and *Anomalagrion hastatum.*

Many other species have been found to occur here on other dates by Mr. John Gillespie, who has studied this locality exhaustively for a number of years.[5]

LILY LAKE, Cape May Point, N. J. 22 Sept.

Except for *Ischnura ramburi,* which was abundant, few dragonflies were seen at this pond of about 10 acres.

PENN VALLEY, Lower Merion Twp., Montgomery Cy., Penna. 8 June, 30 Aug., 2 Sept.

The collecting area here consisted of several small swampy pools in an overgrown meadow. They were fed by springs and contained sedges, cattails, and other vegetation in various degrees of density.

POND NEAR FISHER'S DAM, Southampton Twp., Burlington Cy., N. J. 31 Aug., 4, 7 Sept.

This pond, about half an acre in area, is located on a side road, about one mile north of N. J. Highway No. 40 and about two miles west of Fisher's Dam. Most of the pond is choked with vegetation and the banks are overgrown with small willows and other trees. Among the dragonflies occurring here were *Anax junius, Libellula incesta, Sympetrum vicinum, Pachydiplax longipennis, Lestes congener, L. forcipatus, L. vigilax, Enallagma geminatum, E. aspersum,* and *E. doubledayi.*

SLAB CABIN RUN, College Twp., Centre Cy., Penna. 17 June.

This is a small, turbid stream, ten to fifteen feet wide, which flows over a very rocky bed. At the time when it was visited only *Gomphus descriptus* and *Agrion maculatum* were found along a mile or more of its course.

[5] See "Notes on the Odonata of Delaware County, Pennsylvania," by John Gillespie [Ent. News, LVI: 59–64, Mar., 1945].

SPRING CREEK, Benner Twp., Centre Cy., Penna. 18 June.

Dragonflies were scarce along this stream which drains a wide area and is one of the largest in Centre County. About four miles northeast of State College, where the stream flows through a wooded valley with occasional precipitous rocky slopes, the following dragonflies occurred: *Basiaeschna janata, Epicordulia princeps, Libellula pulchella, Sympetrum rubicundulum, Agrion maculatum, Argia violacea,* and *Ischnura verticalis.*

STATE COLLEGE, College Twp., Centre Cy., Penna. 17, 19 June.

Dragonflies were collected at a small artificial pond, evidently very polluted, less than a mile north of the college campus. At one end of the pond was an extensive swampy area, choked with vegetation, where five species of *Lestes* were found as well as *Nehalennia irene, Chromagrion conditum,* and *Ischnura verticalis.* About the banks of the pond proper, *Anax junius, Tetragoneuria cynosura, Perithemis domita, Libellula luctuosa, pulchella,* and *lydia, Sympetrum rubicundulum, Leucorrhinia intacta, Pachydiplax longipennis, Enallagma hageni, cyathigerum, civile,* and *aspersum, Ischnura posita* and *verticalis,* and *Anomalagrion hastatum* were among the species noted. *Gomphus villosipes, Tetragoneuria canis, Lestes congener,* and *Enallagma carunculatum* have been taken here on other dates.

Though it did not occur at the pond, *Amphiagrion saucium* was found in prodigious numbers in a swampy field about one mile to the north.

TINICUM MARSHES, Darby Twp., Delaware Cy., Penna. 26, 29 Sept., 5, 8 Oct.

At the northern edge of this extensive tidal marsh area, bordering the Delaware River, several interesting dragonflies were collected in the autumn. *Aeschna constricta, Sympetrum obtrusum,* and *S. rubicundulum* were abundant. *Anax junius, Aeschna umbrosa, Sympetrum vicinum, Pantala flavescens,* and *Tramea carolina* were found in small numbers at the marshes and in nearby fields.

UPTON, Pemberton Twp., Burlington Cy., N. J. 29 Apr., 5, 13, 20 May.

Along sandy roads in a typical pine-barren area, the following species were found in the spring: *Gomphaeschna furcillata, Cordulegaster maculatus, Tetragoneuria semiaquea,* and *Libellula deplanata, semifasciata,* and *lydia.* Nearby was a wide variety of habitats including deep streams, swamps, sphagnum bogs, sand pits, ditches, and small ponds. Most of the dragonflies, however, were found along the roads and in clearings among the pines, rather than these aquatic situations.

UPTON PONDS, Pemberton Twp., Burlington Cy., N. J. 20 May, 24, 29, 30 June, 8, 22 July, 12 Aug.

At two small artificial ponds near the railroad at Upton, thirty-six species of dragonflies were collected. The locality and the collections made there are being described in detail in another paper. Among the most interesting species are *Anax longipes, Nannothemis bella, Celithemis martha, C. ornata, Libellula deplanata, L. auripennis, Leucorrhinia frigida, Nehalennia integricollis, Enallagma divagans, E. pictum, E. doubledayi,* and *E. traviatum.*

WESTTOWN LAKE, Westtown Twp., Chester Cy., Penna. 3 Sept.

This artificial pond of ten or twelve acres is used extensively for fishing, boating, and swimming. The banks are wooded in most places but the shoreline is constantly disturbed by fishermen during the summer. On 3 September, the following species were collected or seen: *Dromogomphus spinosus, Perithemis domita, Libellula luctuosa* and *lydia, Sympetrum rubicundulum, Argia apicalis, A. violacea, Enallagma signatum* and *exsulans,* and *Ischnura verticalis.* On a small stream at the outlet of the lake *Agrion maculatum, Hetaerina americana, Argia violacea,* and *Enallagma exsulans* were collected.

WHITESBOG, Pemberton Twp., Burlington Cy., N. J. 29 Apr., 20 May, 24, 29 June, 8, 22 July, 12 Aug.

Dragonflies were collected in the cranberry bogs, along nearby streams, and at a small pond beside the general store. Occurring at the drainage ditches of the bogs were *Progomphus obscurus, Libellula cyanea* and *flavida, Pachydiplax longipennis, Lestes vigilax, Argia violacea,* and *Ischnura posita.*

Elsewhere, in and near the bogs, *Dorocordulia lepida, Nannothemis bella, Celithemis elisa* and *martha, Libellula deplanata* and *semifasciata, Sympetrum vicinum, Leucorrhinia intacta, Nehalennia gracilis, Enallagma pictum, Ischnura posita* and *verticalis,* and *Anomalagrion hastatum* were captured or observed. *Gomphus exilis, Agrion maculatum,* and *Argia violacea* were found along nearby cedar-stained streams.

WYOLA, Newtown Twp., Delaware Cy., Penna. 26 Apr., 17, 22, 25, 29 May, 6 June.

Dragonflies were collected in four or five acres of woodland about two miles north of Newtown Square, Penna. There were many fallen beech and oak trees in clearings in the woods and about them, in sunlit spots, *Gomphus lividus, Lanthus parvulus, Basiaeschna janata, Cordulegaster diastatops, Didymops transversa,* and *Libellula semifasciata* were found. A very small stream, fed by springs farther up in the woods, was the only aquatic habitat in the collecting area.

(*To be continued*)

A New Phyllophaga from Alabama and Georgia (Scarabaeidae: Coleoptera)

By O. L. CARTWRIGHT,* Clemson, South Carolina

It is a pleasure to name the following new species of Phyllophaga after Prof. T. H. Hubbell of the University of Florida who has collected this and so many other fine Coleoptera in the southern states.

Phyllophaga hubbelli n. sp.

Holotype male.—Length 12.4 mm., width 5.3 mm. Elongate, subcylindrical, parallel, shining, glabrous, castaneus, the head darker and pronotum slightly darker than elytra. Antennae 8-jointed, club subequal to stem. Clypeus deeply emarginate, sides arcuate, margin widely reflexed, suture impressed, angulate, surface with moderately coarse strong punctures separated

* Technical Contribution No. 125 from the South Carolina Agricultural Experiment Station, Clemson, S. C.

by their diameters or less. Head two-thirds as wide as pronotum, similarly punctate, a few punctures densely crowded at angle of suture, others less closely placed each side of these, occiput with a medial smooth area and finer punctures each side. Pronotum not quite three-fifths as long as wide, one-third as long as elytra, evenly convex except for a shallow fovea each side two-thirds the distance from median line and anterior margin, sides weakly subangulate at middle, convergent in apical half, slightly less than parallel to base, margins sparsely weakly crenate fimbriate, anterior angles distinct, posterior sharply right-angled, punctures slightly coarser than on head, separated by one to three times their diameters, the median line impunctate. Elytra parallel, about two-thirds as wide as long; sutural costae strong, discal costae weak but distinct; punctuation slightly finer and closer than on pronotum. Mesosternum evenly finely hairy punctate. Abdomen glabrous, very finely sparsely punctate, flattened longitudinally, penultimate segment with a small posterior median triangular depression, the low surrounding swelling finely granulate, terminal segment with a wide smooth transverse anterior ridge interrupted medially, finely closely granulate posteriorly at middle. Pygidium evenly convex, sparsely shallowly coarsely punctate. Both posterior tibial spurs apparently movable, acute, short, the shorter barely twice as long as wide and about one-fourth the length of the longer, the latter narrow and acuminate. Tooth of claw strong, two-thirds distance from apex. Aedeagus, Fig. 1.

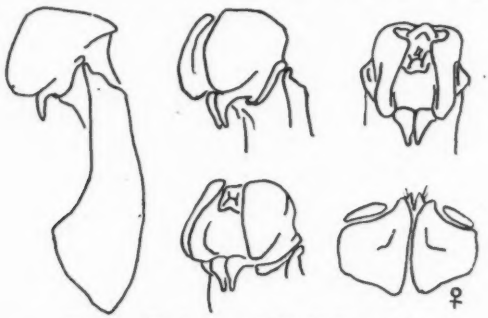

FIG. 1. *Phyllophaga hubbelli* Cartwright
Four views of male aedeagus; one of female genitalia

Allotype female.—Length 12 mm., width 5.6 mm. Club of antennae equaling funicle in length, joints 3, 4, and 5 apparently fused, abdomen evenly convex, posterior half of penultimate and terminal segments finely setigerously punctate, pygidium less convex and more sharply rounded apically, both spurs of hind tibiae thin, slightly curved obtuse, otherwise similar to male.

Holotype and one male *paratype* collected 1.5 miles south of Oxford, Calhoun County, ALABAMA, July 18, 1938, Hubbell and Freauf. *Allotype* female taken on hickory, Summerville, GEORGIA, August 4, 1937, P. W. Fattig. *Paratype* female taken on red oak, Summerville, GEORGIA, August 4, 1937, P. W. Fattig.

Holotype deposited in Museum of Zoology, University of Michigan, paratype male in author's collection, allotype and female paratype in M. W. Sanderson collection.

Phyllophaga hubbelli though not so pallid a species, is allied to *P. longitarsis* (Say) through somewhat similar genitalia and other characters. The very short spur is not longer than adjoining spicules of the terminal fringe.

Ichneumonidae Notes [1]

By WILLIAM F. RAPP, JR.

Recently while reading Dr. Henry Townes' New Catalogue of Nearctic Ichneumonidae [2] I found that I had notes on two items which Doctor Townes was unable to locate. On page 424 of Volume 1, he lists the type of *Conocalama occidentalis bolteri* (Cresson) (*Trogus bolteri*) as being in the Andrew Bolter Collection and states that the Bolter Collection is missing. This collection is at the Department of Entomology, University of Illinois, Urbana. The type specimen was found in a drawer containing the other Ichneumonidae, and has been removed to a special drawer for type material. The specimen is in excellent condition.

[1] Contribution from the Department of Entomology, University of Illinois, Urbana, No. 253.

[2] Memoirs of the American Entomological Society 11.

In Volume 2, page 483, the type of *Eucrosia vierecki* Hertzog is reported as missing. Until September 1944, the specimen was located in the private collection of Mr. P. H. Hertzog, The Peddie School, Hightstown, New Jersey. Some time during that month it was deposited in the insect collection of the Academy of Natural Sciences of Philadelphia. I examined the specimen several years ago and at that time it was in excellent condition.

Notice

Commission for the Study of Damage caused to Entomology by War.

Commission pour l'Étude des Dammages causes par la Guerre a la Entomologie.

HERBERT OSBORN
The Ohio Biological Survey

JEAN LECLERQ
Université de Liége

TO THE DIRECTORS OF ENTOMOLOGICAL LABORATORIES, MUSEUMS AND INSTITUTIONS

Has your institution suffered loss from war:

1. By loss or damage to housing, apparatus, collections or entomological books of value? Have you lost, entirely or in part, noted collections? Types?
2. By expenditures or losses due to special means of protection for collections of special value such as "types"?
3. Have you had to regret the loss or depletion of your scientific personnel? Give the names of your collaborators who have been killed, injured, imprisoned or deported.

TO THE DIRECTORS OR EDITORS OF ENTOMOLOGICAL PUBLICATIONS:

Have you, due to acts of war, had to interrupt publication of your periodicals? Have any of your staff been killed due to acts of war?

Reply to: M. Jean LeClerq,
Université de Liége, 17 Place Delcour,
Liege, Belgium.

Notes and News in Entomology

Under this heading we present, from time to time, notes, news, and comments. Contributions from readers are earnestly solicited and will be acknowledged when used.

Notes on Recent Opinions of the International Commission on Zoological Nomenclature. Between 1939 and the end of 1945, The International Commission on Zoological Nomenclature issued 48 opinions upon which action had been taken long prior to World War II but whose appearance had been delayed for various reasons. Inasmuch as these opinions are perused chiefly by specialists, and because their appearance during the war years has undoubtedly caused them to be overlooked or neglected in many cases, it may be of interest to both taxonomic and economic entomologists to call attention to action taken in cases where the names involved are familiar and widely used. Characteristic of the opinions is the obvious desire of the International Commission to avoid disturbing long-accepted usage, particularly of names that are widely known and used for large and common groups of species.

1. Family names: With reference to the long standing controversy of whether the accepted family name should be that based on the oldest included genus, or on the oldest proposed family name, the views of the Commission as expressed in Opinion 133 (Oct., 1936) were even more clearly outlined in Opinion 141 (Jan. 30, 1943). The Commission reaffirmed the official position that the oldest available generic name *"need not* be taken as the type genus of the family." The use of any generic name in forming the name of a family automatically constitutes the designation of the familiotype, or type genus for that family.

2. Decisions were rendered on the official form of certain family names:

a. The family founded on *Merope* (Neuroptera) is Meropeidae, and that on *Merops* (Birds) is Meropidae, thus avoiding similarity in the forms of two existing family names (Opinion 140).

b. The family name of the lace bugs is Tingidae, rather than Tingitidae, Tingididae, or Tingiidae (Opinion 143).

3. A number of familiar generic names in entomology, many of them the basis of well known family or subfamily names, have been placed on the "Official List of Generic Names in Zoology" in their commonly used and generally known meaning. In many cases, "suspension of the rules" was required in order to avoid the confusion and lack of uniformity that would have resulted by strict application of the rules of nomenclature:

ORTHOPTERA (sens. lat.): *Gryllotalpa* Latr. (Gryllotalpidae, mole crickets), *Hemimerus* Walk. (Hemimeridae), *Labia* Leach (Labiidae, earwigs), *Mantis* L. (Mantidae, praying mantis), *Myrmecophilus* Berth. (Myrmecophilinae, ant-loving crickets), *Oedipoda* Latr. (Oedipodinae, grasshoppers), *Stenopelmatus* Burm. (Stenopelmatidae, sand crickets), and *Tridactylus* Oliv. (Tridactylidae, pigmy mole crickets), all in Opinion 149; *Locusta* L. (Locustidae, grasshoppers), in Opinion 158. In the last named, under Suspension of the Rules the genotype was declared to be the Old World migratory locust, *Locusta migratoria* (L.). The name is therefore proper for the short-horned grasshoppers, rather than for the katydids and their relatives.

LEPIDOPTERA: *Morpho* Fab. (Morphoidae), *Helicopis* Fab., and *Pontia* Fab. (butterflies), in Opinion 137; *Satyrus* Latr. (Satyridae, grayling and meadow brown butterflies), in Opinion 142; *Colias* Fab. (sulphur butterflies, common alfalfa butterfly), in Opinion 146; *Vanessa* Fab. (red admiral and other butterflies), in Opinion 156; and *Argynnis* Fab. (fritillary butterflies), in Opinion 161.

HYMENOPTERA: *Cephus* Latr. (Cephidae, wheat stem sawflies), and *Astata* Latr. (Astatidae, sphecoid wasps), in Opinion 139; *Crabro* Fab. (Crabronidae, crabronid wasps), and *Cimbex* Oliv. (Cimbicidae, cimbicid sawflies), in Opinion 144; *Lasius* Fab. (common genus of ants), and *Anthophora* Latr. (Anthophoridae, hairy flower bees), in Opinion 151; *Bethylus* Latr. (Bethylidae, bethylid wasps), and *Dryinus* Latr. (Dryinidae, dryinid wasps), in Opinion 153; **Torymus* Dal-

man (Torymidae, seed chalcids), in Opinion 155 (the name *Callimome* Spin., cf. Callimomidae, for the same group, is rejected in this Opinion); *Cryptus* Fab. (Cryptinae, ichneumon wasps), *Arge* Schrank (Argidae, sawflies), and *Diprion* Schrank (Diprionidae, sawflies), in Opinion 157; **Ichneumon* L. (Ichneumonidae), **Pimpla* Fab. (Pimplinae), and **Ephialtes* Grav. (all ichneumon wasps), in Opinion 159; **Bracon* Fab. (Braconidae, braconid wasps), in Opinion 162; **Pompilus* Fab. (Pompilidae, the spider wasps), in Opinion 166 (the name *Psammochares* Latr., cf. Psammocharidae, for the same group, is suppressed in this Opinion).—CURTIS W. SABROSKY.

On directing the flight of bees. No insect had been so much studied as has the honey bee, no insect has been the subject of so much discussion, of so many books and articles. Yet there is still a great deal to be learned. For example, it was not until the year 1923 that the significance of a peculiar "dance" of the bees became known, a "dance" consisting of certain shaking and circling movements that bees, individually, perform on the combs. Although quite commonly observed and frequently remarked on by beekeepers, it required, finally, the work of Karl von Frisch, one of the really outstanding biologists of to-day, to solve this age-old riddle along with that other problem of how a bee informs its hive-mates of a newly found source of food.[1]

It may be recalled that in one of his earlier papers[2] von Frisch had demonstrated that bees readily distinguish the scents of various flowers from each other. This ability plays an im-

* Cases where objection was voiced by a group of American taxonomists, and where usage is not uniform in the American literature.

[1] K. v. Frisch, 1923, Über die "Sprache" der Bienen. Zool. Jahrb. Abt. allg. Zool. u. Physiol. 40: 1–186. (Also in book form, Jena, 1923.)

A lecture on the subject, by Professor von Frisch, was printed under the title, "The language of bees," in Science Progress, vol. 32, July 1937 and reprinted in the Anual Report Smithsonian Inst. for 1938, pp. 423–431.

[2] K. v. Frisch, 1919, Über den Geruchsinn der Bienen und seine blütenbiologische Bedeutung. Zool. Jahrb. Abt. allg. Zool. u. Physiol. 37: 1–238. (In book form, Jena, 1919.)

portant rôle in the means of communication within the hive, i.e., in the "language" of the bees.

When a bee has found a good source of nectar, that bee will spread the news of the discovery to her hive-mates by means of these circling "dances" that she performs on the combs. These dance performances attract the attention of the other bees to the discoverer and to the flower scent that clings to her body. Thus the hive-mates are "told" that there is a nectar-source with the particular odor and they are persuaded to search until, finally, all the blossoms having that odor and within the flight range of the hive are being exploited for nectar.[3]

A few years later, in 1927, von Frisch suggested that this phenomenon might have a practical application. If, for example, a few bees are fed sugar solution in the presence of the scent of red clover blossoms (by placing a little dish with the sugar on a layer of blossoms covered by a coarse screen), these bees will, by means of their "dances," stir up many others in the hive to go out and search for the clover scent and thus come to frequent the clover fields. This idea was put to use by the Rus-

[3] This behavior of bees is easily demonstrated by the following experiment, after von Frisch. Near a bee hive, set up a feeding station consisting of a watch-glass containing sugar solution (equal parts sugar and water) and resting upon a filter-paper covered piece of cardboard upon which has been placed several drops of oil of bergamot or other available essential oil. Now start a dozen bees from the hive feeding at this station and allow them to return to the hive again and again, meantime keeping the watch-glass filled. After the feeding is under way, place upon the grass, in a different direction from the hive and about 150 feet distant, a number of similar cardboards but without solution. These may be placed about 6 feet apart. One of the cards should be scented with oil of bergamot, as is the training card, the others with other scents such as oil of melissa and oil of fennel. Professor von Frisch permitted only the original 12 bees (marked) to visit the sugar and removed any newcomers. In the first hour of the experiment 216 bees visited the baitless bergamot card, only 3 visited the fennel card and a single bee the melissa card. If more bees are allowed to feed at the training station and if the time of training is extended the number of visitors to unbaited cards having the same scent will be correspondingly more striking. In the event that there is a heavy honey flow at the time the experiment is tried there may be difficulty in interesting the bees in the sugar solution at the training station.

sians, beginning about 1936. In order to encourage the flight of bees to the red clover fields to improve the seed crop, the Russian practice is to soak clover blossoms in the sugar solution that is used in training the bees. The solution is fed within the hives and at night, in order not to incite "robbing." Recently,[4] von Frisch has been checking the results obtainable by the Russian method against those gotten by his own original method as well as with several modifications. Preliminary work indicates that both methods work well with clover but that the outdoor training method is more economical of sugar. However, not all flowers will impart their scent to a sugar solution; rape is a case in point and the blossoms themselves must be used for training. Also to be noted is that the training scent must be identical with the flower scent, not merely similar. Oil of thyme, for example, is useless for training bees to visit thyme.

These methods of directing the flight of bees to certain plants by training them to the scent are useful, reportedly, in increasing bee visits to plants that would otherwise be relatively neglected by reason of poor nectar secretion or competition with other plants. The aim, generally, is to secure more effective cross-pollination. During a heavy nectar flow from some dominant honey plant it may not be possible to train bees to a lesser source. However, success may even then be achieved by the use of colonies containing many young bees that have not yet begun to gather nectar.

The method may also be used to persuade bees to visit flowers that are without odor. In one case bees were trained by feeding 100 cc. of sugar solution to which one drop of oil of lavender had been added. About 30 drops of the same oil were distributed here and there on the blossoms of a nearby potato field. During the first hour of training 36 bees were counted on the field although before the training began no bees at all could be found. They visited not only the flowers to which the oil had been applied but searched diligently wherever the air was

[4] K. v. Frisch, 1943, Versuche über die Lenkung des Bienenfluges durch Duftstoffe. Die Naturwissenschaften 31: 445–460. (The footnotes and literature in this paper refer to ca. 20 papers and books on training bees for pollination. Most are in Russian.)

scented. Only rarely, however, did a bee actually try to suck nectar from a blossom. Thus, although the method will direct bees to blossoms, visits that are really effective from the standpoint of pollination cannot be secured in the absence of yield.

German experiments on red clover in two different localities also illustrate this point. At Poing, directive pre-training was unsuccessful in establishing bee visits to the clover, while at Markt Schwaben, 4 km. distant, visits were increased 22-fold. It was found that at Markt Schwaben the corolla tubes averaged 7.16 mm. in length; at Poing 8.08 mm. Thus, the tubes at Poing were 0.9 mm. longer and the nectar probably out of reach. The average amount of nectar per flower was about the same, or slightly greater at Poing, being 0.030 mg. per flower per 24 hours as compared with 0.023 mg.

Other results of the training are that the bees may be made to begin work on a given species of plant sooner, that they will work more intensively and may extend their working hours. Some beekeepers have reported an increase in honey production and there should be a better seed crop.—R. G. SCHMIEDER.

A New Entomological Publication. In December, 1945, there appeared No. 1 of Vol. I of a new Japanese entomological periodical, THE TRANSACTIONS OF THE NIPPON LEPIDOPTEROLOGICAL SOCIETY. It is published in Kyoto and its editor is Yoshio Okada. Unfortunately for foreign lepidopterists, the papers in the first number are in Japanese, with no English summaries. The following conditions are listed regarding the Transactions (transl.):

"1) The Transactions are issued irregularly throughout the year. Each volume will contain 4 parts. 2) The price of each volume (10 yen) should be paid in advance. 3) Manuscripts are limited to papers written or introduced by members. 4) Manuscripts are accepted only on the subject of Lepidopterology. 6) All manuscripts should be sent to the editor: Yoshio Okada, Yanagida-cho, Saga, Kyoto."

The Society appears to be newly organized and plans to publish literature on Lepidoptera in addition to the periodical Transactions. The charter membership list of 86 men includes

such names as Sugitani and Shirozu, indicative of support from such recognized authorities on Japanese Lepidoptera.

The editor, Mr. Okada, is a very young man just entering his twenties, but he appears to be an enthusiastic lepidopterist of precocity and ability. The first number of the Transactions contains 26 pages. The five papers and two notes are all from the brushes of Mr. Okada and his brother, Mr. Torii, including a translation from TENTHREDO of Sibatani and Ito's revision of "the so-called genus *Zephyrus*." The first paper is on Japanese species of *Coenonympha*, with the description of a new subspecies from a type series of six specimens, and with an excellent photograph of the holotype. The second paper revises the *Erebia niphonica* group in the "Japanese Empire," describing two new subspecies based mainly on differences of the male genitalia. These genitalic differences are clearly figured. In this first number of the Transactions, Mr. Okada does an astounding and heartening thing. He describes an aberrant form of a *Glaucopsyche* and two aberrant forms of *Oeneis*, and actually refrains from creating a new name for them. American lepidopterists may note with perhaps some horror this heretic in their field of interest!

The first criticism of this first number unfortunately holds true for most Japanese entomological literature: there are numerous misspellings among the scientific terms and names printed in Roman type. To be regretted is the absence of Congress language summaries, even of the descriptions of new subspecies. Many Japanese periodicals usually carry these summaries and thus make the papers available to foreign scientists. If this new publication were in English it would be of considerable interest to American lepidopterists, and if future members carry such clear illustrations, they alone may make the periodical useful to us.

All of Japan's important entomological serials ceased publication during the War: INSECTA MATSUMURANA, KONTYU, MUSHI, TRANSACTIONS KANSAI ENT. SOC., TENTHREDO, and ZEPHYRUS. Thus, at present, the new Lepidoptera publication is the only active Japanese entomological periodical.—CHARLES L. REMINGTON, Sapporo, Hokkaido, Japan.

Wheel-Bug vs. Japanese Beetle

By S. W. Bromley, Ph.D., Bartlett Tree Research Laboratories, Stamford, Connecticut

In a very interesting article appearing in Entomological News, vol. LVI, March 1945, page 67, Mr. E. T. Moul reported on the wheel-bug as an enemy of the Japanese beetle in York County, Pennsylvania. This confirmed some observations made by Mr. Herman S. Porter of Orange, New Jersey. On August 2, 1945, Mr. Porter wrote to me regarding the occurrence of the wheel-bug on the estate of Miss Doris Duke at Somerville, New Jersey, as follows:

"The superintendent's son, Mr. Russell Shafer, was telling me about an insect that killed so many Japanese beetles and he took me over to the linden trees to show me the evidence.

"Each tree had hundreds of dead beetles beneath it and I immediately asked if any spraying had been done, as I suspected that this was more than the work of the wheel-bug. His response was in the negative, so I could only draw the conclusion that the wheel-bugs were the killers. I have never seen wheel-bugs so numerous elsewhere and they certainly should be developed as a beetle control if what I observed had no other limiting factor.

"Another story that Mr. Shafer told me was of the work of these insects in killing Japanese beetles on a vine (I do not remember the kind) on his porch. He said that one could sit on the porch and see the beetles fall."

Personals

University of Wisconsin.—Dr. Robert J. Dicke has been appointed assistant professor in research and teaching and began his work January 23. He has just completed four years as a naval officer on malaria control. Mr. E. H, Fisher joined the staff as extension entomologist. He was formerly with Stokely Foods. Dr. J. T. Medler began his duties as assistant professor, January 1, 1946. He was formerly a naval officer on malaria control. Promotions include Dr. T. C. Allen from associate professor to professor, and Dr. J. H. Lilly from assistant professor to associate professor.

Current Entomological Literature

COMPILED BY CHARLES HODGE IV, EDWIN T. MOUL, MAURICE E. PHILLIPS AND HENRY K. TOWNES JR.

Under the above head it is intended to note papers received at the Academy of Natural Sciences of Philadelphia and the University of Pennsylvania, pertaining to the Entomology of the Americas (North and South), including Arachnida and Myriopoda. Articles irrelevant to American entomology will not be noted; but contributions to anatomy, physiology and embryology of insects, however, whether relating to American or exotic species will be recorded.

This list gives references of the current or preceding year unless otherwise noted. Continued papers, with few exceptions, are recorded only at their first installment.

For records of Economic Literature, see the Experiment Station Record, Office of Experiment Stations, Washington. Also Review of Applied Entomology, Series A, London. For records of papers on Medical Entomology, see Review of Applied Entomology, Series B.

NOTE: The figures within brackets [ ] refer to the journal in which the paper appeared, as numbered in the List of Journals given at the end of the literature. The number of the volume, and in some cases, the part, heft, &c. is followed by a colon (:). References to papers containing new forms or names not so stated in titles are followed by (*); if containing keys are followed by (k); papers pertaining exclusively to Neotropical species, and not so indicated in the title, have the symbol (S).

Papers published in ENTOMOLOGICAL NEWS are not listed.

GENERAL—Baptist, B. A.—Control of insect pests by Agricultural methods. [Tropical Agriculturist] 101: 13–17, 1945. **Beilmann, A. P.**—Some fungus diseases and insects of evergreens. [Mo. Bot. Garden Bull.] 33: 221–223, 1945. **Bess, H. A.**—Influence of natural mortality factors on insect survival. [7] 38: 472–481. **Blanchard, E. E.**—Insects and nematodes of tobacco. [13] 1, no. 1. **Brues, Charles T.**—The future of Entomology. [90] 80: 19–21. **Champlain, A. B.**—Classified collections of insects. [17] 19: 26–30. **Dendy, J. S.**—Fate of animals in stream drift when carried into lakes. [27] 14: 333–357. **Eddy, B.**—Let us take a look at insects in Winter. [Animal Kingdom] 48: 176–181. **Eyndhoven, G. L. Van.**—In Memoriam Dr. A. C. Oudemans. 12 Nov. 1858–14 Jan. 1943. [101] 86: 1–56, 1943. **Frost, S. W.**—Teaching Entomology. [17] 19: 30–33, 1945. **Gardner, J. C. M.**—A note on the insect borers of Bamboos and their control. [Indian Forest Bull.] 125: 1–17, 1945. **Goldschmidt, R. B.**—Mimetic polymorphism; a controversial chapter of Darwinism. (Concluded.) [Quart. Rev. of Biology] 20: 205–230, ill., 1945. **Guyton, T. L.**—A symposium on insect problems in Pa. Introduction. [17] 19: 24–26, 1945. **Haber, V. R.**—Insects in relation to public health. [17] 19: 35–38, 1945. **Nabours, R. K.**—Derivation of Hymenoptera. [7] 38: 457. **Pepper, J. O.**—Insect control in Pa. [17] 19: 33–34, 1945. **Sorenson, C. J.**—A preliminary study of cattle grubs in northern Utah. [Farm & Home Science] 6: 11–12. **Stärcke, A.**—Definition of species, subspecies, variety and aberration. [58] 11: 40–48. **Stahler, R.**—Insect mounts. [Turtox News] 24: 23–24. **Watson, J. R.**—Bayard Franklin Floyd. [39] 28: 39.

Weiss, H. B.—Early entom. ideas and practices in America. [6] 53: 309–308.

ANATOMY, PHYSIOLOGY, MEDICAL—Andre, M.—Hibernation in Tetranycha. [131] 14: 57–61. **Begg, M. & Hogben, L.**—Chemoreceptivity of Drosophila melanogaster. [108] 133: 1–19. **Barendrecht, G.**—On gynandomorphy in Osmia rufa L. [58] 11: 146–147. **Cook, W. C.**—Vitality of beet leafhopper on favorable and unfavorable host plants. [84] 27: 37–46. **David, M.**—Action of colchicine and acenaphthene on spermatogenesis of Orthoptera of the genus Stauroderus Boh. [5] 221: 185–186. **Davis, M. B.**—The effect of population density on longevity in Trogoderma versicolor Crentz. [84] 26: 353–362. **Fernald, H. F.**—A colony of solitary wasps. [7] 38: 458–460. **Hamnett, G. G.**—An investigation into the life-history and morphology of Phaedon cochleariae F. [93] 114: 368–381, ill. **Haskins & Enzman.**—Occurrence of impaternate females in the Formicidae. [6] 53: 263–277. **Henson, H.**—Theoretical aspects of insect metamorphosis. [2] 21: 1–15. **Hickin, N. E.**—Mode of entry of contact insecticides. [31] 156: 753–754, 1945. **Hovanitz, W.**—Effects of genetic and environmental variations on Colias populations. [7] 38: 482–502. **Jones, E. T. & Piper, P. A.**—Insect photography with limited equipment. [65] 47: 275–282, ill. **Krishnamurthi & Rao.**—Media for rearing Rice moth (Corcyra cephalonica St.) in work on the egg-parasite Trichogramma minutum R. [11] 14: 252–253. **Kullenberg, B.**—Genitalia of Lygus pratensis (L.) (Hemiptera). [28] 62: 177–183. **Light, S. F. & Illig, P. L.**—Rate and extent of development of neotenic reproductives in groups of nymphs of termite genus Zootermopsis. [67] 53: 1–40. **Lohmander, Hans.**—Vorläufige Spinnennotizen. [83] 35A: no. 16, 1–21. **MacSwain, J. W.**—Nesting habits of Andrena rhodotricha Linsley. [55] 21: 134. **Marshall, W. S.**—Rectal sac of Melanoplus femur-rubrum DeG. [7] 38: 461–471. **Matthée, J. J.**—Biochem. differences between solitary and gregarious phases of locusts and noctuids. [22] 36: 343–371. **Park, Thomas.**—Life tables for the Black Flour Beetle, Tribolium madens Charp. [90] 79: 436–444. **Poisson & Patay.**—A propos de la destruction des insectes parasites par des matières "inertes." [4] 16: 123–126, 1939. **Querci & Romei.**—Effects of the reflected solar radiation on insects. [39] 28: 36–38. **Rau, P.**—Longevity as a factor in psychic evolution. [7] 38: 503–504. **Richards & Cutkomp.**—Neuropathology in insects. [6] 53: 313–355. **Ris, Hans.**—The structure of meiotic chromosomes in the grasshopper. [92] 89: 242–256, ill. **Scott, T. L.**—Bee anatomy.

[Microscope and Entomological Monthly] 5: 277–281, ill., 1945. **Talbot, M.**—Fluctuations in activity of ants. [84] 27: 65–70. **Tauber, O. E. & Bruce, W. N.**—Preliminary studies of starvation—Pyrausta nubilalis. [81] 20: 53–55. **Tauber, A. H., Joyce, C. R. & Tauber, O. E.**—Further toxicity studies with the dog tick Dermacentor variabilis (Say). [81] 19: 429–433. **Thomas, M.**—Instinct in spiders. [3] 41: 199–206. **Torres, B. A.**—Cicadas injurious to agriculture (Argentina). [13] 1, no. 4. **Webb, J. E.**—On the respiratory mechanism of Melophagus ovinus L. (Diptera). [93] 115: 218–250, ill. **Williams, C. M.**—Continuous anesthesia for insects. [68] 103: 57–58. **Yeager & Munson.**—Survival time in poisoned roaches. [7] 38: 559–600. **Yeager & Munson.**—Physiological evidence of a site of action of DDT in an insect. [68] 102: 305–307.

ARACHNIDA AND MYRIOPODA—Baker, E. W.—Scheloribates chauhani, a new species of oribatid mite from India (Acarina: Ceratozetidae). [91] 35: 386–388, ill., 1945. **Braendegaard, J.**—I. Spiders (Araneina) from northeast Greenland between Lats. 70° 25′ & 76° 50′ N. II. On the possibility of a reliable determination of species of the females of the genus Erigone. [Meddelelser Om Grønland] 125: 5–31, ill., 1940 (*). **Buitendijk, A. M.**—Voorloopige catalogus van de Acari in de collectie—Oudermans. [18] 24: 281–391, ill., 1945. **Corr, W. H.**—Truth about scorpions. [15] 60: 80–86. **Chamberlin & Ivie.**—Nearctic mygalomorph spiders. [7] 38: 549–558 (*). **Cooley, R. A.**—Ixodes tovari, a new species from Mexico. [55] 21: 144–148. **Exline, H.**—Spiders of genus Conopistha from Peru and Ecuador. [7] 38: 505–528 (*). **Hoff, C. C.**—Pseudoscorpions from North Carolina. [89] 64: 311–327, ill., 1945 (*). **Lundblad, O.**—New and little known Hydracarina from South America. [28] 65: 135–162. **Mello-Leitao, A. de.**—New species of gen. Pyenogonium Brünnich, 1764. [32] no. 42. **Thomas, M.**—(See Anatomy, etc.) **Trägårdh, I.**—Comparative morphology and phylogeny of the Mesostigmata. [28] 62: 169–176. **Trägårdh, I.**—Classification of Uropodida. [28] 65: 173–185. **Van Riper, W.**—Jumping spiders. [15] 54: 467, ill. **Van Riper, W.**—How strong is the trapdoor spider? [15] 60: 70–71. **Vergani, A. R.**—Transmission of "Lepra explosiva" of the orange. (Argentina.) [13] 1, no. 3. **Wallis, O. L.**—Okinawan trapdoor spiders. [15] 60: 68–69.

THE SMALLER ORDERS—DerWerf, G. J. van.—Een onbekend Trichopterenlarfje Orthotrichia angustella. [101] 86: 83–85, ill., 1943. **Dias dos Santos, N.**—Contrib. to knowledge of fauna of São Paulo. I. Genus Dythemis

Hagen. [32] no. 40 (*). **Kruseman, Jr., G.**—Voorloopige Naamlijst van Nederlandsche Psocoptera, benevens van die, welke in het aangrenzende gebrid gevonden zijn (4 de mededeeling over Psocoptera). [101] 86: 94–97, 1943. **Montgomery, B. E.**—Dist. and relative seasonal abundance of the Indiana species of Cordulidae and Libellulidae. (Odonata.) [Proc. Indiana Acad. Sci.] 54: 217–224, 1944. **Ricker, W. E.**—A first list of Indiana Stoneflies (Plecoptera). [Proc. Indiana Acad. Sci.] 54: 225–230, 1944. **Santos, N. D. dos.**—Contribuição ao conhecimento da fauna de Pirassununga, estado de São Paulo. I. Genero Dythemis Hagen, com a descricão de duas especies novas e notas sobre outras especies. (Libellulidae: Odonata.) [32] 40: 1–11, ill., 1945 (*). **Watson, J. R.**—Ecological and geographic distribution of the Thysanoptera of the Geenton. [39] 28: 33–36. **Werneck, F. L.**—Os Tricodectideos dos Roedores. [111] 42: 85–150 (*). **Wright, M.**—Dragonflies predaceous on the stable fly, Stomoxys calcitrans (L). [39] 28: 31–32.

HEMIPTERA—Carvalho, J. C. M.—Mirideos neotropicais, generos Diaphinidia Uhler, Hyaliodes Reuter, Hyaliodocoris Knight, Sinervus Stal et Spartacus Distant, com descricoes de especies novas. [32] 36: 1–79, ill., 1945. **Carvallio, J. C. M.**—Mirideos Neotropicais XVI. Revisao do genero Garganus Sta. (Hemip.). [32] 45: 1–15, ill., 1945. **Cook, W. C.**—Beet leafhopper (see Anatomy, etc.). **DeLong, D. M.**—New genus—Retusanus—and five new species of Mexican leafhoppers. [55] 21: 135–140. **Drake & Hambleton.**—Concerning Neotropical Tingitidae. [91] 35: 356–367 (*). **Fennah, R. G.**—The Cixiini of the Lesser Antilles. [95] 58: 133–146, ill. (*k). **Ferris & Usinger.**—American Polyctenidae. [55] 21: 121–124 (*). **Ghani, A. N.**—Studies on cotton Jassid (Empoasca devastatus Distant) in the Punjab. VII: Age of leaf and Jassid susceptibility. [Proc. Indian Acad. Science] 22: 219–224, 1945. **DeCoursey & Hofmaster.**—Some factors affecting the insecticidal action of Pyrethrum extracts on the beet leafhopper. [47] 71: 553–565, 1945. **Holgersen, H.**—Norske sikadee I. [Nytt Magasin for Naturvidenskapene] 84: 205–218, ill., 1944. **Huckett, H. C.**—Timing rotenone applications for control of the pea aphid on Long Island, with special reference to mosaic incidence. [N. Y. S. Agric. Exp. Station] Bull. 713: 3–30, ill., 1945. **Hurd, M. P.**—A monograph of the genus Corythaica Stal. [81] 20: 79–99, ill. (k). **Kullenberg, B.**—(See Anat., etc.). **Mansilla, E. E. L.**—Phylloxera (see Anat., etc.). **Poisson, R.**—Notes fauniques sur les Hemipteres aquatiques des mares, lacs et tourbieres

des environs de Besse-en-Chandesse (Puy-de-Dome). Remarque sur la distribution geographique de Micronecta poweri Dgl. et Scott. [4] 16: 127–132, 1939. **Rakshpal, R.**—Mustard-aphid (Rhopalosiphum pseudobrassicae Davis). [11] 14: 272–273. **Sleesman, G. B.**—Coccidae or scale insects of Pa. [17] 19: 43–48, 1945. **Torres, B. A.**—Cicadas (see Anat., etc.). **Watson, J. R.**—White flies on gardenias. [39] 28: 30–31.

LEPIDOPTERA—Barros, A. R. do R.—Contribuicoes ao estudo da familia Arctiidae. (Lepidoptera: Heterocera.) [32] 38: 1–11, ill., 1945. **Bryk, Felix.**—Über die Schmetterlingsausbeute der Schwedischen wissenschaftlichen Expedition nach Patagonien 1932–1934. [83] 36A: no. 3, 1–30, ill. (S). **Chermock, R. L.**—Notes on life histories of some Floridian butterflies. [17] 19: 40–43, ill., 1945. **Chermock & Chermock.**—Two new races of North American butterflies. [17] 19: 38–40, 1945. **D'Almeida, R. F.**—Novos Ithomiidae da fauna Brasileira. (Lepidoptera: Rhopalocera.) [32] 39: 1–13, ill. (*). **Eisner, C.**—Ist im Genus Parnassius Saison-Dimorphismus anzutreffen? [18] 23: 44–46, ill., 1941. **Eisner, C.**—Einige Ergebuisse der Sichtung der Gattungen Melitaea und Argynnis in Rijksmuseum Van Natuurlijke Historie, Leiden. [18] 24: 116–124, 1942 (*). **Fisher, K. J.**—Colias, migrating in U. S. A. [107] 20: 107–109. **Freeman, H. A.**—A new form of Hesperia metea Scudder from Texas. [Field & Laboratory] 12: 20–22. **Freeman, H. A.**—Further notes on the Hesperoidea of Dallas County, Texas. [Field & Laboratory] 12: 56–58. **Gadd & Fonseka.**—(See under Hymenoptera.) **Goldfinch, G. M.**—Notes on Australian Boarmiidae and Oenochormidae (Lepidoptera) with description of new species. [16] 69: 189–197, 1944. **Goncalves et Silva Cruz.**—Lepidopteros de Portugal Coleccionados por Alfredo W. Tait. [Broteria] 14: 177–187, 1945. **Goodson, F. W.**—New species of American Theclinae in British Museum. [9] 78: 169–171. **Hovanitz.**—Colias (see Anat., etc.). **Jones, F. M.**—Platoeceticus Packard, and a remarkable new species of the genus. (Lepidoptera: Psychidae.) [1] 71: 99–124, ill. (*). **Knaben, N.**—De norske artene av slekta Toxocampa Guen. (Noctuidae.) [Bergens Museums Arbok] 1939/40. Heft 1, Nr. 6. 1–15. **Lempke, B. J.**—Catalogus der Nederlandsche Macrolepidoptera VI. [101] 84: 276–350, ill., 1941. **Lempke, B. J.**—Catalogus der Nederlandsche Macrolepidoptera VII. [101] 85: 72–143, ill. **Martin, K.**—Schmetterlinge von Madeira. [18] 23: 1–12, 1941. **Murthi & Rao.**—Alternate media for large-scale rearing of the rice moth—Corcyra cephalonica St.—in the work of mass-production

of the egg-parasite Trichogramma minutum R. [11] 14: 252–253, ill., 1945. **Musgrave, A.**—Some butterflies of Australia and the Pacific. Swallowtails II. [Aus. Museum Mag.] 8: 421–424, ill., 1945. **Olsen, H.**—Blitzing the hemlock looper. [Nature, Wash.] 39: 34–36, ill. **Opheim, M.**—Forteguelse over Macrolepidoptera, saerlig fra Vestlandet og Trondelagen. [Bergens Museums Arbok.] 1938 Heft 2, Nr. 7; 1–14. **Poisson, Abbage, Barbotin.**—Sur une migration de la Vanesse du Chardon Pyrameis cardui L. en Bretagne. [4] 16: 116–118, 1939. **Rau, P.**—Yucca plant, Y. filamentosa and the Yucca moth, Tegeticula (Pronuba) yuccasella Riley: An ecological-behavior study. [Annal Mo. Bot. Garden] 32: 373–394. **Roepke, W.**—On the genera Dudusa Walk. and Tarsolepis Butl. in the Dutch East Indies. (Lep., Het., Notodontidae.) [101] 86: 77–83, ill., 1943 (*). **Roepke, W.**—On some new or little known Indo-Malayan Noctuids. (Lepid., Heter., family Agrotidae.) [18] 23: 13–30, ill., 1941 (*). **Scott, F. B.**—Hawk moths of Darjeeling and Sikkim. [Jour. Bengal Nat. Hist. Soc.] 20: 62–71, ill. (k). **Turner, A. J.**—Revision of Australian Lepidoptera Oecophoridae XII. [16] 69: 253–273, 1944 (*). **Van de Pol, P. H.**—Investigations concerning the Androconia of certain Satyridae, in particular of Coenonympha pamphilus L. [101] 86: 91–94, ill., 1943. **Vari, L.**—Anacampsis betulinella, a new species of the Gelechiadae. [101] 84: 351–355, ill. **Wahlgren, E.**—Individual variability in Papilio machaon machaon L. [29] 7: 1–9. **Watson, J. R.**—A new host for Composia fidelissima vagrans Bates. (Lepidoptera.) [39] 28: 29. **Wilson, G. F.**—The leopard moth. [Jour. Royal Hort. Soc.] 70: 148–150.

DIPTERA—Addis, C. J.—Collection and preservation of sandflies (Phlebotomus) with keys to U. S. species. (Diptera: Psychodidae.) [89] 64: 328–332, ill., 1945. **Albuquerque, D. de O.**—Descricão do Alotipo Macho de Fannia petrochiae Shannon and del Ponte, 1926 e notas sobre a femea. (Diptera: Muscidae.) [32] 41: 1–4, ill., 1945. **Albuquerque, D. de O.**—Sobre Fannia trimaculata (Stein, 1897) Malloch 1913. (Diptera: Muscidae.) [32] 34: 1–11, ill., 1945. **Alexander, C. P.**—New or little-known Tipulidae—Neotropical species. [75] 12: 234–264; 390–419 (S). **Alexander, C. P.**—Neotropical crane-flies. [6] 53: 279–292 (*). **Audcent, H. L. F.**—Addition to Bristol Insect Fauna (Diptera) since 1942. [Proc. Bristol Nat. Soc.] 27: 46–48. **Audcent, H. L. F.**—Addition to Bristol insect fauna (Diptera) since 1939. [Proc. Bristol Nat. Soc.] 9: 381–385. **Begg & Hogben.**—Drosophila (see Anat., etc.). **Cerqueira**

& Lane.—Note on Haemagogus capricornii Lutz. [10] 47: 279–288. **Davis, D. E.**—Annual cycle of plants, mosquitoes, birds and mammals in two Brazilian forests. [27] 15: 243–295, ill., 1945. **deMeijere, J. C. H.**—Over de metamorphose vau Metopia leucocephala Rossi, Cacoxenus indagator Low, Palloptera saltuum L., Paranthomyza nitida Mg. en Hydrellia nigripes Zett. (Diptera.) [101] 86: 57–61, ill., 1943. **deMeijere, J. C. H.**—Die Larven der Agromyzinen. [101] 86: 61–76, ill., 1943 (k). **Goffe, E. R.**—Type-species for Meigen's "1800" genera in the Syrphidae. [8] 81: 241–248. **Harden, P. H.**—Occurrence of Orthpodomyia alba Baker in Louisiana. [14] 5: 131. **Herman, C. M.**—Nose bot fly of deer. [Cal. Fish & Game] 32: 17–18, ill., 1946. **Hill & McDowell.**—Wyeomyia caracula Dyar & Nunez Tovar, descr. of larva and pupa and redescr. of adult. [10] 47: 296–299. **James, Maurice T.**—A new larvaevorid parasite of the social butterfly Eucheira socialis Westwood. [91] 35: 328–330, ill. **Lee, D. J.**—Notes on Australian mosquitoes (Diptera; Culicidae). V. Genus Armigeres and new species of Armigeres, Theobaldia and Culex. [16] 69: 215–225, ill., 1944. **Michener, C. D.**—Seasonal variations in mosquitoes. [6] 53: 293–300. **Morlan, H. B.**—Dengue fever mosquito control at Galveston, Texas. [Proc. & Tran. Texas Acad. Science] 28: 112–117, 1944. **Rapp, W. F., Jr.**—New Psychodidae from Barro Colorado Island. [6] 53: 309–312. **Rapp, W. F., Jr.**—Pseudolutzomyia, new name for Lutzomyia Curran. [10] 47: 278. **Rapp & Snow.**—Catalog of Apioceridae. [55] 21: 157–160. **Roth, L. M.**—Aberrations and variations in anopheline larvae of the southeastern United States. [10] 47: 257–278. **Smart, J.**—Classification of Simuliidae. [36] 95: 463–532. **Welch, E. V.**—Anopheles albimanus Wied in Florida. [14] 5: 145. **Wisecup & Shillinger.**—Observations on the abatement of pest mosquitoes with DDT residual sprays. [39] 28: 27–29. **Wright, M.**—See under Smaller Orders.

ORTHOPTERA—Ander, K.—Revision of Orthopteran types of C. P. Thunberg. [28] 66: 155–162. **Armer, Sister J. M.**—Influence of the diet of Blattidae on some of their intestinal Protozoa. [Proc. & Trans. Texas Acad. Science] 28: 93, 1944. **Gunn,** and others.—Mass departure of locust swarms in relation to temperature. [31] 156: 628–629, 1945. **Hebard, M.**—The Orthoptera of the Appalachian Mountains in the vicinity of Hot Springs, Va., and notes on other Appalachian species and recent extensions of the known range of still other southeastern species. [1] 71: 77–97. **Jong, C. de.**—Orthopterological notes I. On the Lesini of the Leiden Museum. (Tettigoniidae, Copiphorinae.) [18] 23:

263–272, ill., 1942 (*). **Marshall.**—Melanoplus (see Anat., etc.). **Rehn & Rehn.**—A contribution to our knowledge of the Eumastacidae (Orth., Acridoidea) of Africa and Madagascar. Part 1. [41] 97: 179–248, ill., 1945 (*). **Yeager & Munson.**—Roaches (see Anat., etc.).

COLEOPTERA—Armstrong, J. W. T.—On Australian Dermestidae. IV. [16] 70: 47–52, ill., 1945 (k*). **Bernet Kempers, K. J. W.**—De larven der Helodidae. (Cyphonidae.) [101] 86: 85–91, ill., 1943. **Blake, D. H.**—Nine new species of Metachroma from the West Indies. [91] 36: 22–27, ill. **Blake, D. H.**—Six new species of beetles of a eumolpid genus new to the West Indies. [91] 35: 323–327, ill. **Brinck, P.**—Gyrinidae of Colombia. [29] 9: 19–20 (*). **Bryant, G. E.**—New species of African Chrysomelidae (Halticinae, Coleoptera). [75] 12: 336–340, ill. (*). **Corporaal, J. B.**—Notes on some Cleridae in the Hamburg Zoological Museum. [101] 84: 359–361, 1941 (*). **Curran, C. H.**—Insects in the house. Spider beetles. [15] 55: 46–47, ill. **D'Almeida, R. F.**—New Ithomiidae of the Brasilian fauna. [32] no. 39. **Deelder, C. L.**—Revision of the Erotylidae (Coleo) of the Leiden Museum. [18] 24: 49–115, ill., 1942 (*). **Fender, K. M.**—New Laricobius from Oregon. [55] 21: 152. **Jong, C. de.**—Notes on Cerambycidae. I–XIV. [18] 24: 18–48, ill., 1942. **Kelsheimer, E. G.**—Notes on the great elm leaf beetle. [39] 28: 25–27, ill. **Marshall, G. A. K.**—On the east African species of Polyclaeis (Coleoptera, Curcul.). [75] 12: 285–309 (k*). **McKeoun, K. C.**—Australian insects. XXV. Coleop. Tiger Beetles. [Aust. Museum Mag.] 8: 411–414, ill., 1945. **Palm, T.**—On development and life cycle of Obrium cantharinum L. [29] 7: 19–21. **Park, O.**—New Pselaphid from Brazil associated with termites. [Bull. Chicago Acad. Sci.] 7: 445–451. **Patay, M. R.**—Contribution à l'étude d'un Coleoptere (Leptinotarsa decemlineata (Say)). [4] 16: 3–145, ill., 1939. **Potts, R. W. L.**—A new Coenonycha from Calif. [55] 21: 141–143. **Ram, G.**—Study of the life cycle of Bruchus analis Feb., the common pulse beetle. [11] 14: 273–274, 1945. **Saylor, L. W.**—Synoptic revision of the U. S. scarab beetles of the subfamily Dynastinae. [91] 35: 378–386; 36: 16–21, ill. (k). **Schedl, K. E.**—Neue Scolytidae aus Java. Beitrag zur Morphologie und Systematik der Scolytoidea. [101] 85: 1–49, ill., 1942 (*). **Tanner, V. M.**—New species of Araeoschizus (Coleoptera-Tenebrionidae). [120] 6: 125–126, 1945. **Upton, R. G.**—Bark beetles of the pines of Stephen F. Austin State Teachers College. [Proc. & Trans. of Texas Acad. Science] 28: 100–102, 1944. **VanDoesburg, P. H.**—A new flightless,

Ophrygonius (Zang) from Borneo. [101] 84: 356–357, 1941. **VanDoesburg, P. H.**—Aceraius lamellatus Grav. from Celebes. [101] 84: 358, 1941.

HYMENOPTERA—Buren, W. F.—Leptothorax longispinosus subsp. lowensis nom. n. [10] 47: 288. **Cockerell, T. D. A.**—Descriptions and records of Bees. [75] 12: 350–356 (*). **Fernald.**—Wasps (see Anat., etc.). **Gadd & Fonseka.**—Neoplectrus maculatus Feiriere—a predator and parasite of Natada mararia Mo. and other nettlegrubs. [Ceylon Jour. Sci.] 23: 9, 1945. **Gregg, E. V.**—Statistical study of taxonomic categories in ants. [7] 38: 529–548. **Haskins & Enzman.**—(See Anat., etc.) **Holgersen, H.**—The ants of Norway. (Hymen., Formicidae.) [Nytt Magasin for Naturvidenskapene. Oslo] 84: 165–203, ill., 1944 (k). **MacSwain.**—Andrena (see Anat., etc.). **Malaise, R.**—Key to the saw-flies of the world. [28] 62: 131–140. **Malaise, R.**—New South American saw-flies. [28] 63: 89–119. **Mao, Y.-T.**—Synopsis of Mexican species of Cardiochites Nees. [55] 21: 125–134 (*). **Roman, A.**—Die Ichneumoniden des Nordlichen Norwegens. [Tromso Museums Arshefter] 54: 3–25, 1936. **Ross, H. H.**—New tribe and genus of Nematine sawfly. [55] 21: 153–156. **Roszler, Paul.**—Myrmecologisches 1938. [101] 85: 50–71. **Schuster, R. M.**—New brachypterous species of Photopsis. [55] 21: 149–151. **Scott, T. L.**—(See Anat., etc.) **Soukup, J.**—Los Proscópidos del Museo de Historia Natural "Javier Prado." [66] 8: 242–259, ill. (S). **Talbot, M.**—Ants (see Anat., etc.). **Wahlgren, E.**—Leafmining Tenthredinid larvae. [29] 9: 138–148.

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LIST OF JOURNALS CITED

1.—Trans. Amer. Ent. Soc. 2.—Biol. Rev. of Cambridge Philos. Soc. 3.—Bul. et An. Soc. Ent. de Belg. 4.—Bull. Soc. Sci. Bretagne. 5.—Comptes rendus de l'Acad. Sci., Paris. 6.—Journ. N. Y. Ent. Soc. 7.—Ann. Entom. Soc.

America. 8.—Entom. Monthly Mag. 9.—The Entomologist, London. 10.—Proc. Ent. Soc. Washington. 11.—Current Science, India. 12.—Entomologische Tidskrift. 13.—Minist. d. Agric. d. la Nacion (Argentina). 14.—Mosquito News. 15.—Natural History. 16.—Proc. Linn. Soc. New South Wales. 17.—Proc. Pa. Acad. Sci. 18.—Zoologische Medeelingen. 22.—Bull. Entom. Research. 27.—Ecological Monographs. 28.—Entomologiske Tidskrift. 29.—Opuscula entomologica. 31.—Nature, London. 32.—Bol. Mus. Nac., R. d. Janeiro. 36.—Trans. R. Entom. Soc. London. 39.—Florida Entomologist. 47.—Jour. Agr. Research. 55.—Pan-Pacific Entomologist. 58.—Entomologische Berichten. 65.—Trans. Kansas Acad. Sci. 66.—Bol. Mus. Hist. Nat. "Javier Prado," Lima. 67.—Univ. Calif. Publications Entom. 68.—Science, New York. 75.—Annals & Mag. Nat. Hist. 81.—Iowa Sta. Coll. Jour. Science. 83.—Ark. f. Zool., K. Svenska Vetensk. i. Stockholm. 84.—Ecology, Brooklyn. 87.—Opinions & Declar., Internat. Comm. Zool. Nomen. 89.—Trans. Amer. Microscop. Soc. 90.—Amer. Naturalist. 91.—Jour. Washington Acad. Sci. 92.—Biological Bulletin. 93.—Proc. Zool. Soc. London. 95.—Proc. Biol. Soc. Washington. 101.—Tijdschrift v. entomologie, Amsterdam. 107.—Proc. R. Entom. Soc. London (A). 108.—Proc. R. Entom. Soc. London (B). 111.—Mem. Inst. Oswaldo Cruz. 120.—Great Basin Nat., Provo, Utah. 131.—Bol. Mus. Nac. Hist. Nat., Santiago de Chile.

Review

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